




CONSULTING CIVIL & TRAFFIC ENGINEERS, RISK MANAGERS



Project: Revised Transport Assessment – V3  
Proposed Scheme Amendment  
Lot 5066, Kargotich Road, Lots 5, 7, 9, Oxley Road, Lot 10 & Part Lot 12,  
Rowley Road

Client: Turner Master Planners Australia & Gray and Lewis for the Landowners

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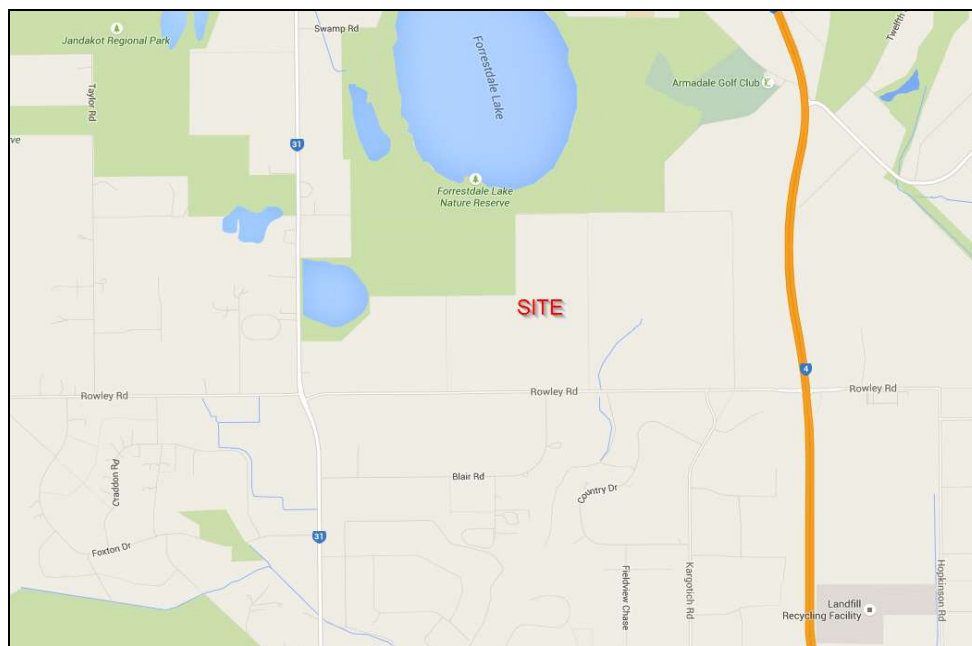
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# 1 Introduction

Shawmac has been engaged by a landowner group to prepare a Transport Impact Assessment to consider the road traffic impacts associated with the proposed scheme amendment for Lot 5066 Kargotich Road, Lots 5, 7 and 9, Oxley Road, Lot 10 and Part Lot 12, Rowley Road in South Forrestdale, within the City of Armadale, for future development as industrial uses. This assessment is reflective of the previous assessment undertaken in 2014 on behalf of the Maddestra Group for a Scheme Amendment for Lots 6, 8 and 200 Rowley Road. It is also cognisant of the liaison and engagement with both MRWA and DoP in the context of the resolution of access and road reservation issues to Rowley Road within the broader industrial cell bounded by Tonkin Highway to the east, rural land and Forrestdale Lake to the north, rural lands to the west and Rowley Road to the south.

The wider study area under consideration is bounded by Rowley Road to the south, Tonkin Highway to the east, existing rural land to the west and Forrestdale Lake and rural land to the north and is shown on **Figure 1**.



**Figure 1 - Site Location**

## 2 Existing Situation

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The broader study area is located approximately 26 kilometres south-east from the Perth CBD and approximately 6.5 kilometres west from the Armadale District Centre. The study area will be primarily accessed by Rowley Road which links to Tonkin Highway, Nicholson Road and further west to the Kwinana Freeway.

Rowley Road is currently a two-lane single carriageway of a rural standard with a posted speed zone of 80 km/hr. It is classified as a *Regional Distributor Road* under the *MRWA Functional Road Hierarchy*. These roads have been defined as “...roads that are not *Primary Distributors* but which link significant destinations and are designed for efficient movement of people and goods within and beyond regional areas. They are managed by Local Government.” However, it has been identified as a future major freight route between Fremantle Port and other port activities to the west and associated industrial development within the subject area. Based on information from Main Roads Western Australia (MRWA), the recorded traffic volume of Rowley Road west of Nicholson Road was approximately 3,800 vehicles per day in 2007. Updated traffic volumes along Rowley Road, west of Nicholson Road, are in the order of 5,800 vpd (MRWA, March 2014). It is currently operated and maintained under the jurisdiction of the City of Armadale but will likely be transferred to the jurisdiction of MRWA as a *Primary Distributor* in the future.

### 3 Future Regional Road Network Planning

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The future road network adjacent to the study area is expected to include the upgrading of Rowley Road to provide for urban development of the Wungong Waters area and future industrial development of land along Rowley Road from Tonkin Highway to approximately 1.4 km west of Nicholson Road.

The upgrade of Rowley Road west of Tonkin Highway may also be triggered by the development of the Fremantle Outer Harbour and James Point Port container ports in Cockburn Sound which are anticipated to rely on the Rowley Road corridor and the Anketell Road corridor to link Tonkin Highway to the Port activities to the west.

The Department of Planning has commissioned GHD to undertake a detailed road reservation review of both Rowley Road and Anketell Road, which includes the section of road abutting the southern frontage of the subject lands, with completion of the study expected in late 2015 or early 2016.

## 4 Proposed Development

The *Economic and Employment Lands Strategy (EELS)* is a land development capacity study undertaken for the broader area including the subject lands. The study indicated that approximately 290 hectares of land have the potential to be developed into industrial land within the broader area. That assessment was inclusive of the proposed urban development of industrial uses on Lot, 5066 Kargotich Road, Lots 5, 7 & 9, Oxley Road and Lots 6, 8, 10, Part Lot 12 and Lot 200, Rowley Road.

The landowner group's proposal is to seek a MRS amendment for approximately 160 hectares out of the total of developable land within the broader study area. Land north of Oxley Road which was included in the EELS study has been omitted due to environmental constraints.

The area subject to application for the Metropolitan Regional Scheme (MRS) amendment is shown in **Figure 2** and comprises approximately 160 hectares of land.

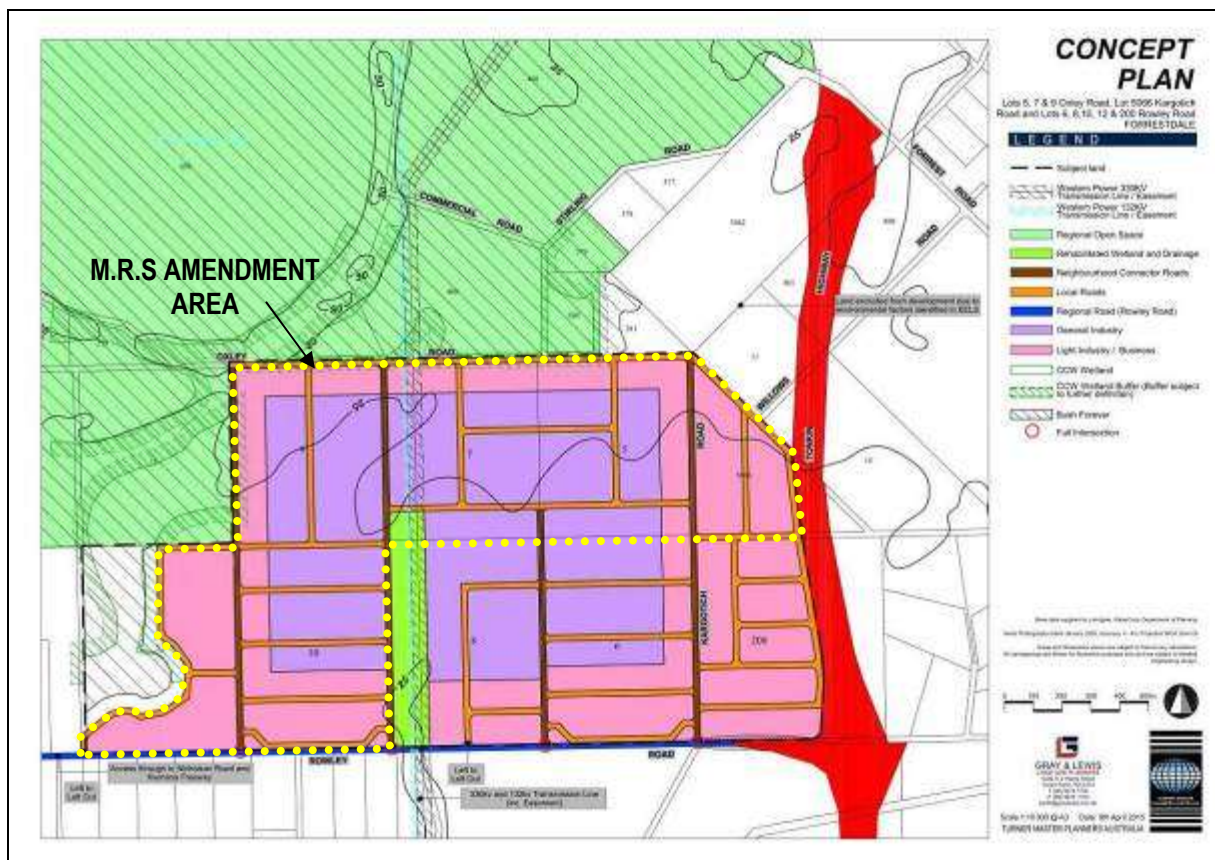


Figure 2 - Proposed MRS Amendment Area

## 5 Preliminary Traffic Assessment

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A preliminary desktop traffic generation and distribution analysis was undertaken to estimate future traffic volumes generated by development and the magnitude of traffic at the main interface points between the study area and the regional road network in order to identify future transport infrastructure requirements. This assessment is supplemental to that undertaken on behalf of Maddestra Group in 2014 for lands within the same broader industrial cell.

A more detailed analysis of the transport infrastructure requirements external and internal to the study area, including specific intersection requirements, will be outlined in a subsequent Transport Impact Assessment consistent with relevant WAPC guidelines and requirements which will be prepared as part of the Local Structure Planning and Development Application process.



## 6 Traffic Generation

### 6.1 Traffic Generation

In order to establish a relevant trip generation rate, the Institution of Transportation Engineers *ITE Trip Generation Manual, 8<sup>th</sup> Edition* was used and the specific rate which was applied to the anticipated yield of the subject lands was *Industrial Park (Category 130)*. **Table 1** illustrates the estimated traffic generation for the lands in question.

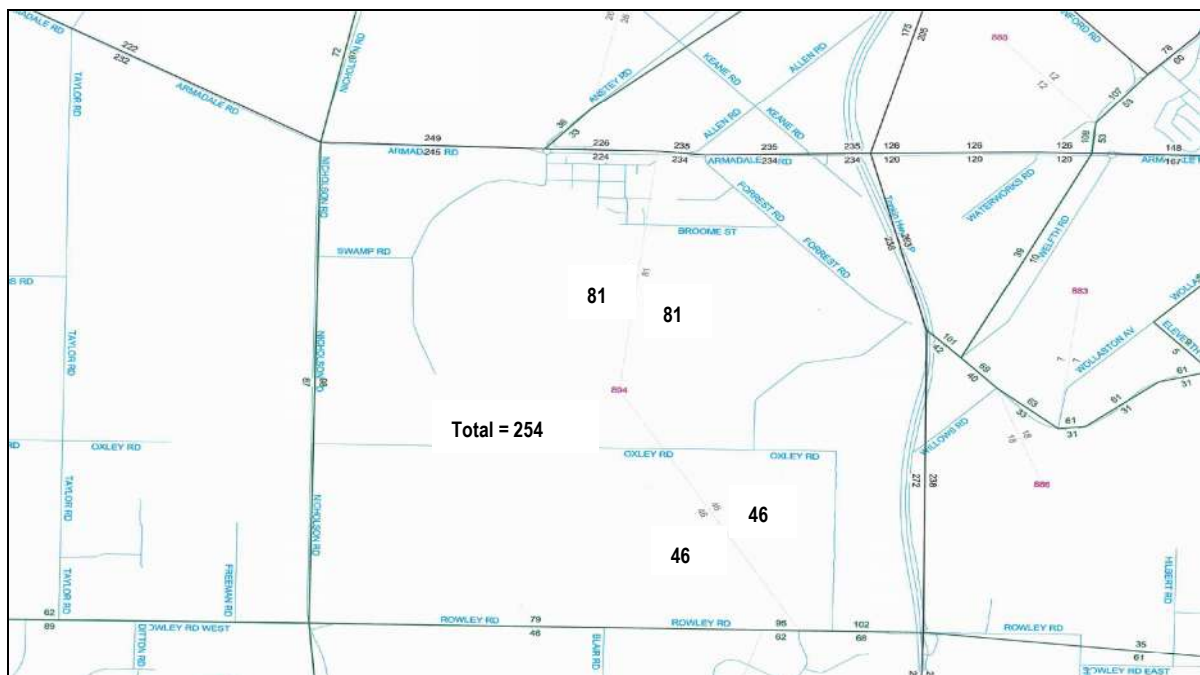
**Table 1 – Estimated Traffic Generation for Subject Lands**

Land Use	Generation Rate			Unit	Quantity	Estimated Generation								
	Daily	A.M. Peak	P.M. Peak			Daily			A.M. Peak			P.M. Peak		
						In	Out	Total	In	Out	Total	In	Out	Total
Industrial	157.780	21.400	22.000	Ha	160	7574	7573	15147	1705	349	2054	444	1668	2112
					Total	7574	7573	15147	1623	431	2054	444	1668	2112

It has been assumed that the net developable land would be in the order of 60% of the overall lands within the industrial area with the residual 40% dedicated to roadside and other infrastructure to service future industrial development. It has therefore been assumed that approximately 160 hectares of the subject land would be available to be developed.

It should be noted that a proportion of the subject lands fall within a high tension transmission line easement with restricted uses permitted subject to them meeting safe operations guidelines.

Subsequent to the initial assessment and generation estimates undertaken by Shawmac, MRWA modelled flows on the Regional Operations Model (ROM) and provided the data shown on **Figure 3**. This indicates a total generation from the traffic precinct under review in the order of approximately 25,400 vehicles.

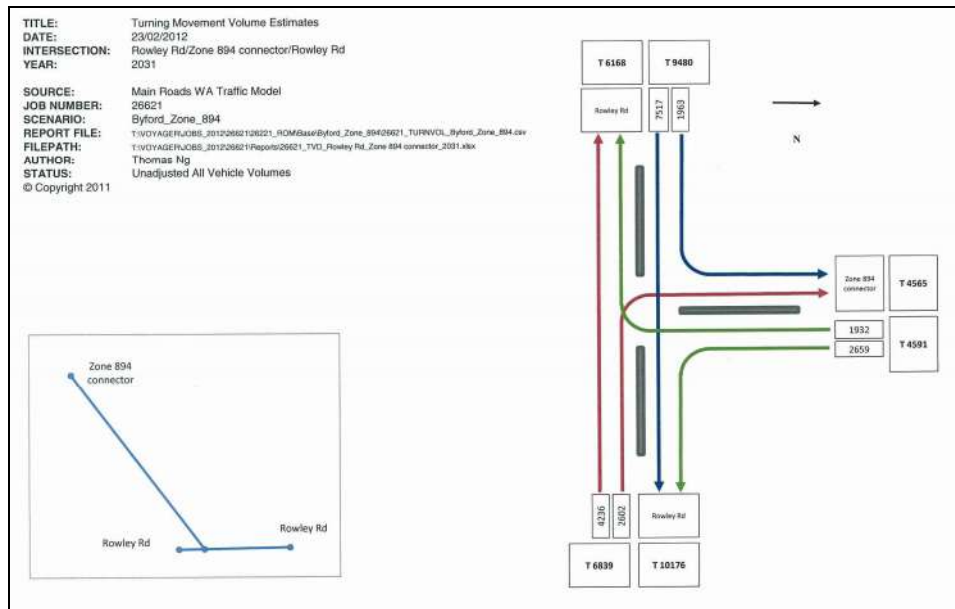


**Figure 3 - MRWA ROM Output (Note Figures Represent '00 Daily Traffic Flows)**

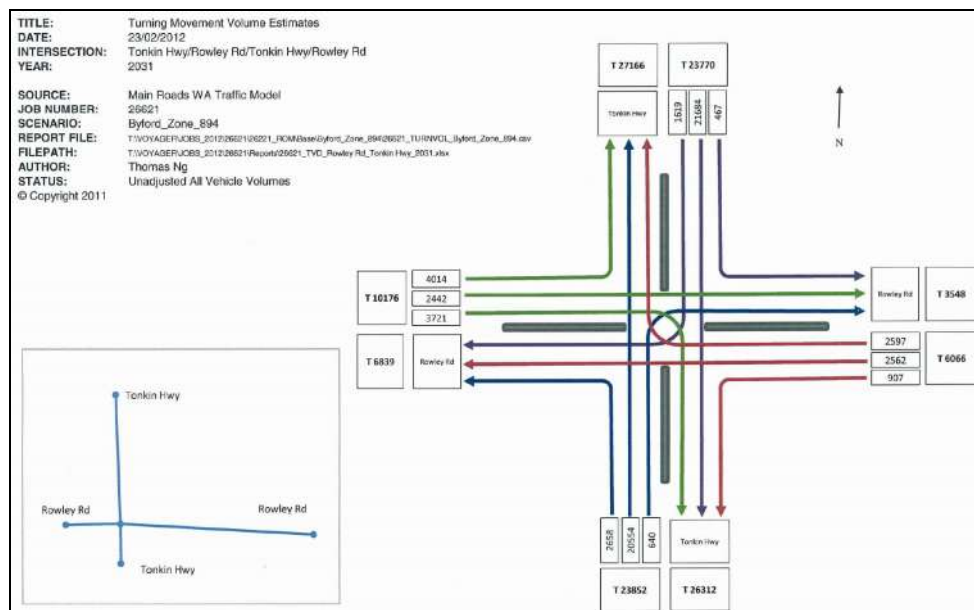
This is consistent within 10% of the estimate of future traffic generation for the broader study area, including the subject lands, as noted in the April 2012 assessment and subsequent update in April 2014. It should be noted that while there is a link shown to the north of the study area within of the subject lands, to connect to the North Forrestdale lands, there is expected to be limited traffic generated by the industrial uses which would utilise this link with virtually all traffic oriented to and from the south via Rowley Road.

## 6.2 Traffic Distribution

As part of the development of the ROMS traffic model, MRWA predicted 2031 intersection turning movements for the intersections of Rowley Road – Kargotich Road and Rowley Road and Tonkin Highway and these are shown on **Figure 4** and **Figure 5**.



**Figure 4 - MRWA Advised Turning Movements – Kargotich Road and Rowley Road**



**Figure 5 - MRWA Advised Turning Movements – Tonkin Highway and Rowley Road**

### 6.3 Future Road Network

The specific design details associated with the proposed connections to the north side of Rowley Road will be further refined during the development of the Local Structure Plan for the study area following the approval of the various Scheme Amendment proposal within the concept plan area. The indicative concept overall plan for the area shows six (6) connections to Rowley Road which will be required to accommodate the anticipated traffic to be generated by the area. These connections which are shown on **Appendix B** consist of the following:

#### **WITHIN THE PREVIOUS SUBJECT SITE:**

##### **Kargotich Road**

- The easternmost connection to Rowley Road is on the extension of Kargotich Road north of Rowley Road and this will function as a signalised full movement intersection with the existing realigned Rowley Road/Kargotich Road intersection to the south in the short-term.

##### **Intersection 2**

- A connection to Rowley Road aligned on the boundary between Lots 6 and 8 Rowley Road and located approximately 1 km west of the Tonkin Highway/Rowley Road interchange comprising a full movement intersection.

##### **Intersection 3**

- A connection to Rowley Road located within Lot 8 and located approximately 1.3 km west of the Tonkin Highway/Rowley Road interchange comprising a partial movement unsignalised intersection (left-in/left-out only) intersection.

#### **WITHIN THE CURRENT SUBJECT SITE:**

##### **Intersection 4**

- A connection to Rowley Road aligned on the boundary between Lots 8 and 10 Rowley Road and located approximately 1.6 km west of the Tonkin Highway/Rowley Road interchange comprising a full movement signalised intersection.

##### **Intersection 5**

- A connection to Rowley Road aligned on the boundary between Lots 10 and 12 Rowley Road and located approximately 2.1 km west of the Tonkin Highway/Rowley Road interchange comprising a full movement intersection.

##### **Intersection 6**

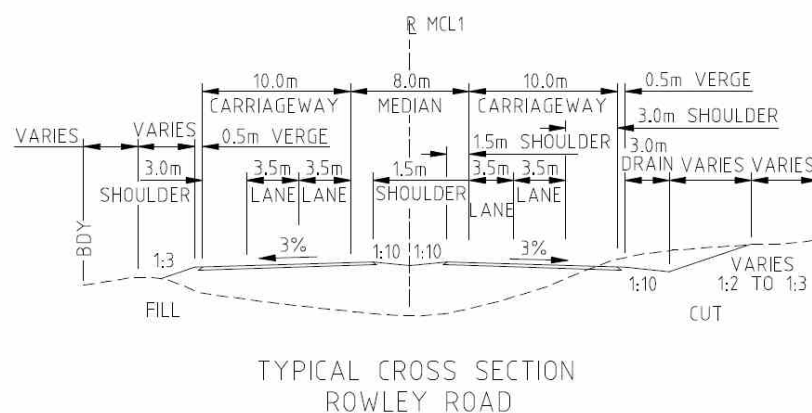
- A connection to Rowley Road located on the western boundary of Lot 12 and located approximately 2.7 km west of the Tonkin Highway/Rowley Road interchange comprising a partial movement unsignalised intersection (left-in/left-out only) intersection.

Details of the required configuration of these intersections will be fully investigated in the Transport Assessment report when the Local Structure Plan is prepared. The proposed configuration of these intersections is shown in **Appendix A**. The layout, geometry and location of the intersections on Lots 200, 6 and 8 Kargotich Road has been negotiated and confirmed with both MRWA and DoP in 2014 as part of a Scheme Amendment process for the adjacent landowners.

All of these connections will provide primary access to the proposed industrial development within the broader industrial area and will be designed and constructed to an appropriate industrial standard.

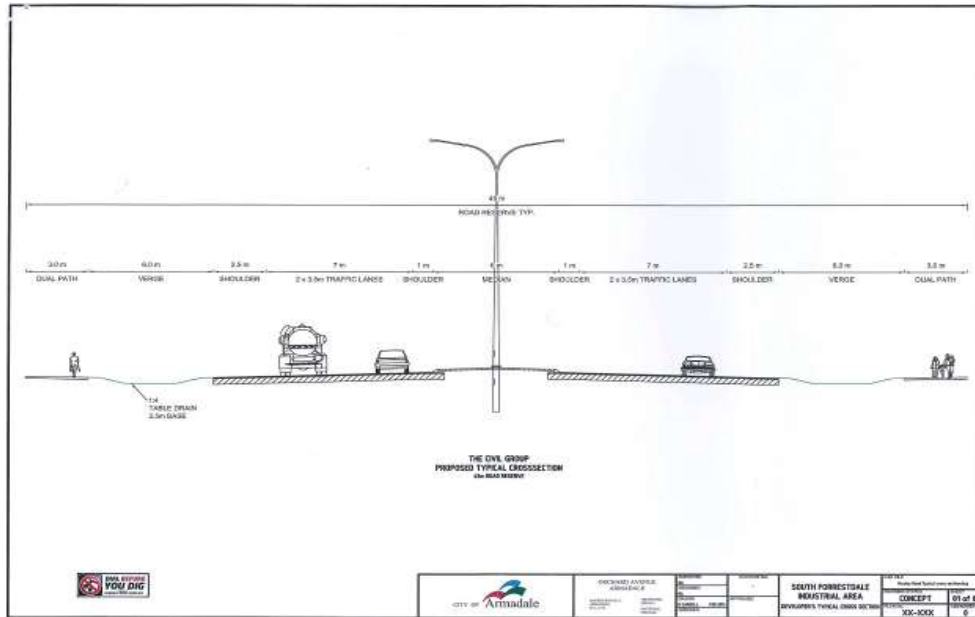
Rowley Road between Tonkin Highway and the Kwinana Freeway will ultimately be upgraded to service the future development of the precinct including the study area. Discussions with MRWA in May 2013 and again in 2014 have confirmed that an indicative road reservation width of 40m will be required for Rowley Road with 20m to be dedicated from the northern boundary of the existing 20m road reservation. Further discussions with both MRWA and DoP through to the first quarter of 2014 confirmed the endorsement of the Kargotich Road intersection and intersections 2 and 3 as shown in **Appendix A** and associated Land Protection Plans and Carriageway Patterns Plans developed and used to update the *Metropolitan Region Scheme*. These plans are shown in **Appendix B** and are predicated on a 40 metre road reservation width.

An indicative road cross-section for Rowley Road was developed as part of the investigation work GHD undertook for the future development in the port lands as part of the Outer Harbour and James Point areas to the west. The report "*Northern Transport Access Naval Base / Kwinana Port Site (Rowley Road Extension): Report on Alignment Definition Study*" indicated an ultimate cross-section of a two-lane, two carriageway divided limited access highway to service the anticipated increase in road trains and B doubles servicing the Fremantle Outer Harbour and James Point container port. The GHD cross section is shown on **Figure 6**.



**Figure 6 - Typical Cross Section of Upgraded Rowley Road Recommended in GHD Report**

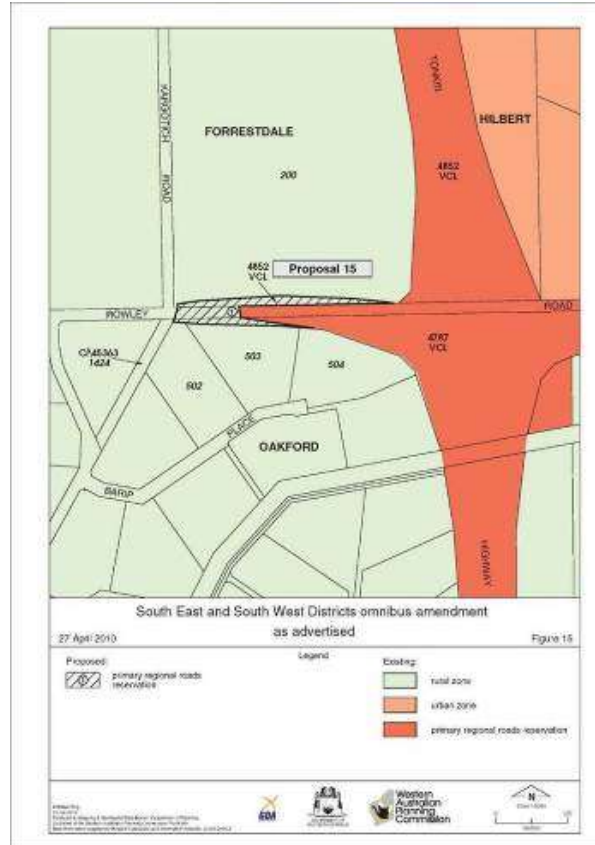
Subsequent further consideration resulted in a review of the future Rowley Road reservation width and in response to this the City of Armadale prepared a cross section that identifies an ultimate reserve width of 45 metres. MRWA advised that this is acceptable and requested that the Zoning Plan and area to be rezoned be modified to show the 45m requirement for the Rowley Road reserve from Kargotich Road to Tonkin Highway as identified on the City's cross section drawing which is shown in **Figure 7**.



**Figure 7 City of Armadale – Rowley Road Reservation Width**

MRWA and the Department of Transport (DOT) have defined the land requirements for a future grade separation of Tonkin Highway and Rowley Road into a full diamond grade separated interchange. The land requirements associated with this interchange as advertised as part an omnibus amendment is shown in **Figure 8**. These requirements may be subject to change following consideration by the WAPC of the Scheme Amendment for the subject lands.

The upgrading of the Rowley Road corridor will entail the construction of a second carriageway and appropriate intersection controls for the intersecting roads between Tonkin Highway and the Kwinana Freeway. At this stage the technical details of the upgrade past the study area frontage is still under investigation with the broader planning for both the Rowley Road and Anketell Road corridors under way by GHD for the Department of Planning.



**Figure 8 - Land Requirements for Future Expansion of Tonkin Highway and Rowley Road Intersection (Omnibus Amendment - Subject to Change)**

The other potential road upgrade flagged in the City of Armadale's preliminary comments with regard to the road network relating to the overall industrial area west of Tonkin Highway and north of Rowley Road is the possibility of extending Forrest Road currently east of Tonkin Highway into the study area via a grade separated interchange at Tonkin Highway. Subsequent to the comments, environmental investigation showed that the land area adjacent to the alignment of the extended Forrest Road is not able to be developed due to environmental constraints, and although the current subject area is to the south of the Forrest Road / Tonkin Highway intersection, the issue of access needs more consideration at the Transport Assessment stage.

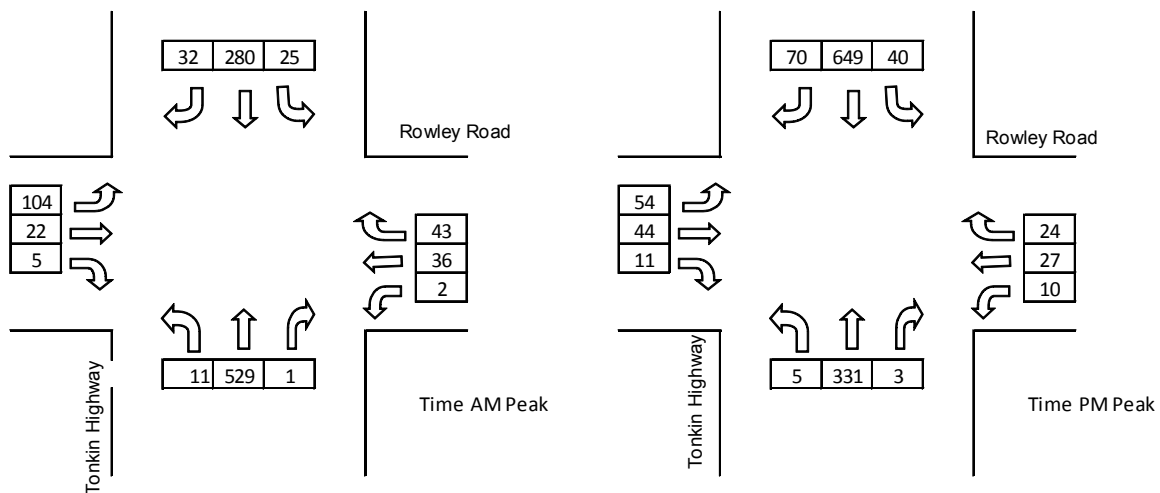
Due to the limited opportunities for connectivity to the north and east, all primary access to the broader industrial area, including the subject lands will be afforded via Rowley Road.

## 7 Traffic Operations Analysis

In order to assess the anticipated future performance at the proposed additional connections to Rowley Road, traffic modelling for intersections 4 and 5 has been undertaken based on existing flows and future flows as detailed below.

Existing traffic flows through the Tonkin Highway – Rowley Road intersection were determined from current SCATS data and historical counts and are shown on **Figure 9**.

Predicted future typical peak hour 2031 traffic flows through the Rowley Road – Kargotich Road intersection and the Tonkin Highway – Rowley Road intersection were assumed to be 10% of the flows as advised by MRWA.



**Figure 9 - Existing Flows – Tonkin Hwy – Rowley Road**

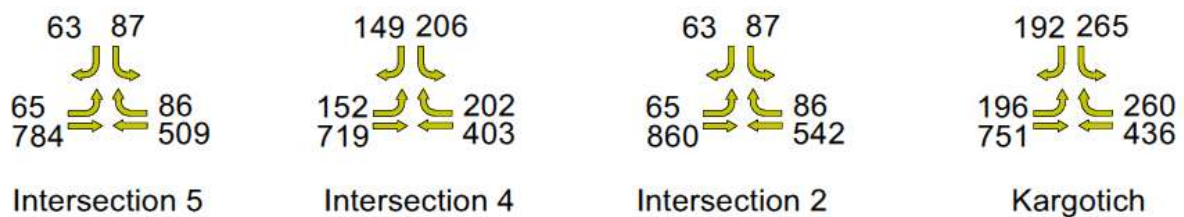
Predicted 2031 flows for Kargotich Road, Rowley Road and Tonkin Highway have been provided by MRWA and were used to model base performance; however, based upon anticipated yields from the industrial uses, the SIDRA analysis outlined in the April 2014 assessment was modified to reflect expected turning movements at the intersections between Lots 6 and 8, between Lots 8 and 10 and at the Rowley Road/Kargotich Road intersections. Additional analysis has been undertaken in this assessment at the proposed full movement intersections to Rowley Road between Lots 8 and 10 and between Lot 10 and Part Lot 12.

It is assumed that by 2031 the Tonkin Highway/ Rowley Road intersection will be grade separated and Rowley Road will be dualled west of Tonkin Highway.

A traffic generation and distribution exercise was undertaken for the expected p.m. peak hour under ultimate build-out conditions and assuming a full upgrade of Rowley Road to a dual carriageway. A SIDRA analysis was then undertaken for the critical Rowley Road/Kargotich Road proposed full movement signalised connection to Rowley Road based upon the overall concept plan area, as noted in the April 2014 assessment.

Based upon this desktop threshold analysis, it was concluded that four (4) full movement intersections along Rowley Road would be required with at least two of these (Kargotich and the intersection between Lots 8 and 10) being signalisation under the ultimate build-out scenario.

Typical peak hour flows anticipated at full build out are shown on **Figure 10**.



**Figure 10 - Predicted 2031 Typical Peak hour Flows**

The full movement intersections were modelled using Sidra Intersection software and the results are shown on **Figure 11**, **Figure 12**, **Figure 13** and **Figure 14**.

Movement Performance - Vehicles											
Mov ID	ODMo	Demand Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
		Total	HV %				Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
East: Rowley Road East											
5	T1	459	10.0	0.209	4.5	LOS A	2.3	17.7	0.48	0.41	55.9
6	R2	274	5.0	0.763	27.7	LOS C	6.6	48.1	1.00	0.94	40.4
Approach		733	8.1	0.763	13.1	LOS B	6.6	48.1	0.68	0.60	48.9
North: Kargotich Road											
7	L2	279	5.0	0.270	9.5	LOS A	2.5	18.4	0.55	0.69	51.0
9	R2	202	5.0	0.845	32.8	LOS C	5.4	39.1	1.00	1.02	38.4
Approach		481	5.0	0.845	19.3	LOS B	5.4	39.1	0.74	0.83	44.8
West: Rowley Road West											
10	L2	206	5.0	0.181	8.2	LOS A	1.5	10.7	0.46	0.66	52.0
11	T1	791	10.0	0.810	21.7	LOS C	9.8	74.3	0.99	1.00	44.3
Approach		997	9.0	0.810	18.9	LOS B	9.8	74.3	0.88	0.93	45.7
All Vehicles		2211	7.8	0.845	17.1	LOS B	9.8	74.3	0.78	0.80	46.5

**Figure 11 - Operational Performance – Kargotich Road**



<b>Movement Performance - Vehicles</b>											
Mov ID	ODMo v	Demand Flows		Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
		Total veh/h	HV %				Vehicles veh	Distance m			
<b>East: Rowley Road East</b>											
5	T1	571	10.0	0.214	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
6	R2	91	5.0	0.350	20.9	LOS C	1.3	9.4	0.82	0.97	43.7
Approach		661	9.3	0.350	2.9	NA	1.3	9.4	0.11	0.13	57.1
<b>North: Access Road</b>											
7	L2	92	5.0	0.058	6.3	LOS A	0.2	1.2	0.31	0.60	53.0
9	R2	66	5.0	0.406	29.3	LOS D	1.2	8.8	0.90	1.01	39.8
Approach		158	5.0	0.406	16.0	LOS C	1.2	8.8	0.56	0.77	46.5
<b>West: Rowley Road West</b>											
10	L2	68	5.0	0.089	6.7	LOS A	0.2	1.1	0.23	0.62	53.3
11	T1	905	10.0	0.247	0.0	LOS A	0.0	0.0	0.00	0.00	59.9
Approach		974	9.6	0.247	0.5	LOS A	0.2	1.1	0.02	0.04	59.4
All Vehicles		1793	9.1	0.406	2.7	NA	1.3	9.4	0.10	0.14	57.1

Figure 12 - Operational Performance Intersection 2

<b>Movement Performance - Vehicles</b>											
Mov ID	ODMo v	Demand Flows		Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
		Total veh/h	HV %				Vehicles veh	Distance m			
<b>East: Rowley Road East</b>											
5	T1	424	10.0	0.177	4.0	LOS A	2.2	16.9	0.41	0.35	56.3
6	R2	213	5.0	0.652	30.2	LOS C	5.8	42.1	0.98	0.85	39.3
Approach		637	8.3	0.652	12.7	LOS B	5.8	42.1	0.60	0.51	49.2
<b>North: Access Road</b>											
7	L2	217	5.0	0.225	9.8	LOS A	2.4	17.3	0.52	0.69	50.9
9	R2	157	5.0	0.687	33.5	LOS C	4.5	32.9	1.00	0.87	38.1
Approach		374	5.0	0.687	19.7	LOS B	4.5	32.9	0.72	0.77	44.6
<b>West: Rowley Road West</b>											
10	L2	68	5.0	0.054	7.6	LOS A	0.4	3.3	0.35	0.62	52.5
11	T1	905	10.0	0.680	17.0	LOS B	10.8	82.3	0.90	0.80	46.9
Approach		974	9.6	0.680	16.3	LOS B	10.8	82.3	0.86	0.79	47.3
All Vehicles		1984	8.4	0.687	15.8	LOS B	10.8	82.3	0.75	0.70	47.3

Figure 13 - Operational Performance Intersection 4

<b>Movement Performance - Vehicles</b>											
Mov ID	ODMo v	Demand Flows		Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
		Total veh/h	HV %				Vehicles veh	Distance m			
<b>East: Rowley Road East</b>											
5	T1	536	10.0	0.201	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
6	R2	91	5.0	0.301	17.7	LOS C	1.1	8.0	0.77	0.94	45.4
Approach		626	9.3	0.301	2.6	NA	1.1	8.0	0.11	0.14	57.3
<b>North: Access Road</b>											
7	L2	92	5.0	0.056	6.2	LOS A	0.2	1.2	0.30	0.59	53.0
9	R2	66	5.0	0.337	24.0	LOS C	1.0	7.3	0.87	0.98	42.3
Approach		158	5.0	0.337	13.7	LOS B	1.0	7.3	0.54	0.75	47.9
<b>West: Rowley Road West</b>											
10	L2	68	5.0	0.088	6.7	LOS A	0.2	1.1	0.23	0.62	53.3
11	T1	825	10.0	0.225	0.0	LOS A	0.0	0.0	0.00	0.00	59.9
Approach		894	9.6	0.225	0.5	LOS A	0.2	1.1	0.02	0.05	59.4
All Vehicles		1678	9.1	0.337	2.5	NA	1.1	8.0	0.10	0.15	57.3

Figure 14 - Operational Performance Intersection 5



All intersections are expected to operate at acceptable Levels of Service with queueing and delays within an acceptable range. The offset between the proposed partial movements intersections, full movement unsignalised intersections and signalised intersections are considered to be acceptable. The intersections to the west of Kargotich Road will be addressed in more detail during the detailed Local Structure Planning Process.

## 8 Conclusions

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Based on the assessment undertaken it is predicted that in the order of approximately 290 hectares of developable industrial lands estimated to generate approximately 24,500 vehicle trips per day will be made available from the entire site. The subject lands comprising Lot 5066, Lots 5, 7, 9 and 10 and Part Lot 12 are estimated to generate approximately 15,200 vehicle trips per day.

These trips are expected to be distributed to the upgraded regional road network via six road connections to the north side of Rowley Road.

Modelling confirms that all intersections along Rowley Road are expected to operate at acceptable Levels of Service under ultimate build-out conditions.

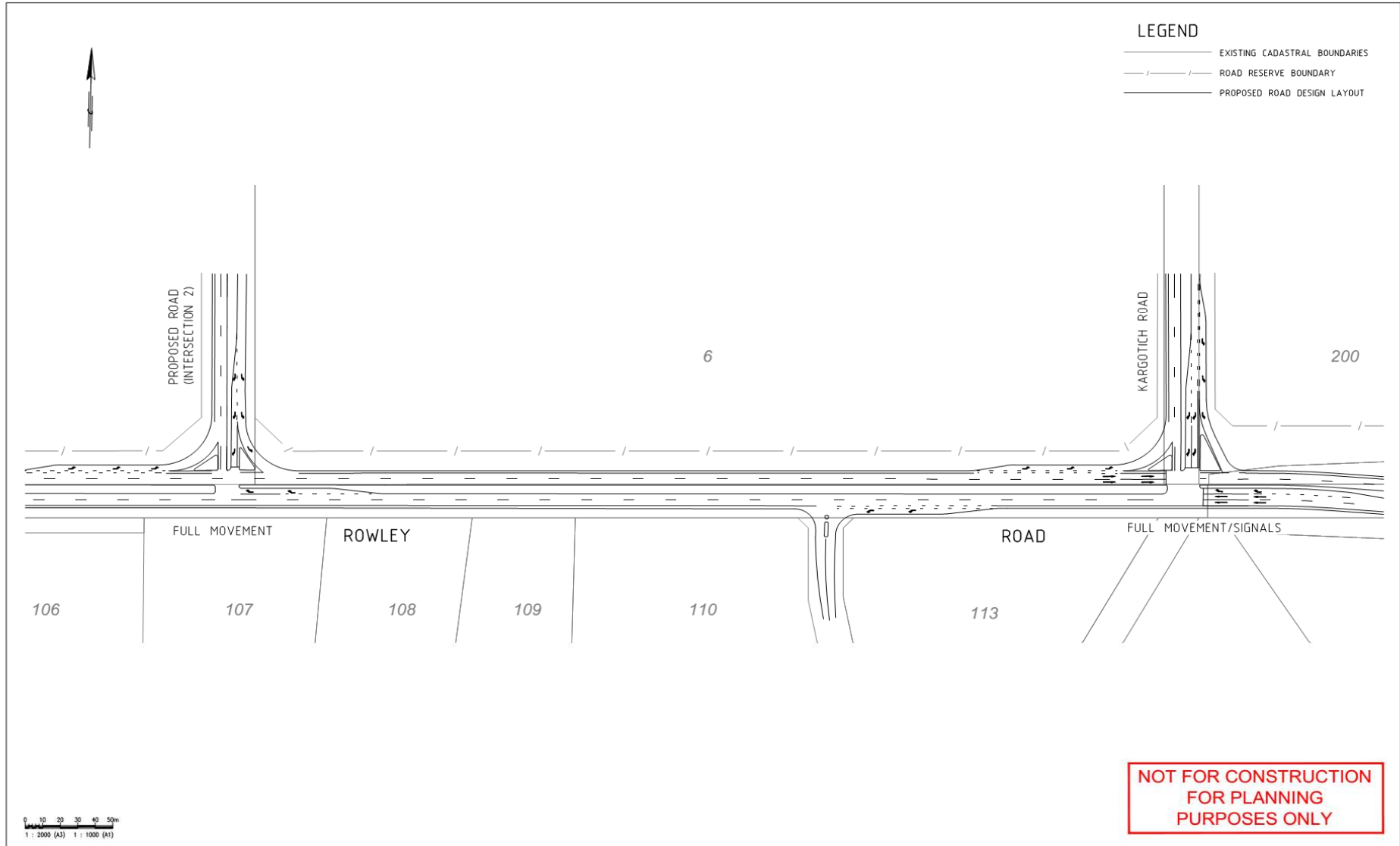
The details associated with the layout, geometry, traffic control and expected traffic operations associated with the additional connection will be further confirmed as part of the Local Structure Planning process.

On the basis of the above it is concluded that future vehicular traffic associated with development within the Scheme Amendment area can be accommodated through the implementation of additional road connections to the north side of Rowley Road. The spatial location and layout of the proposed intersections along Rowley Road are considered to be appropriate and will accommodate the expected future traffic.



## Appendix A – Concept Drawings

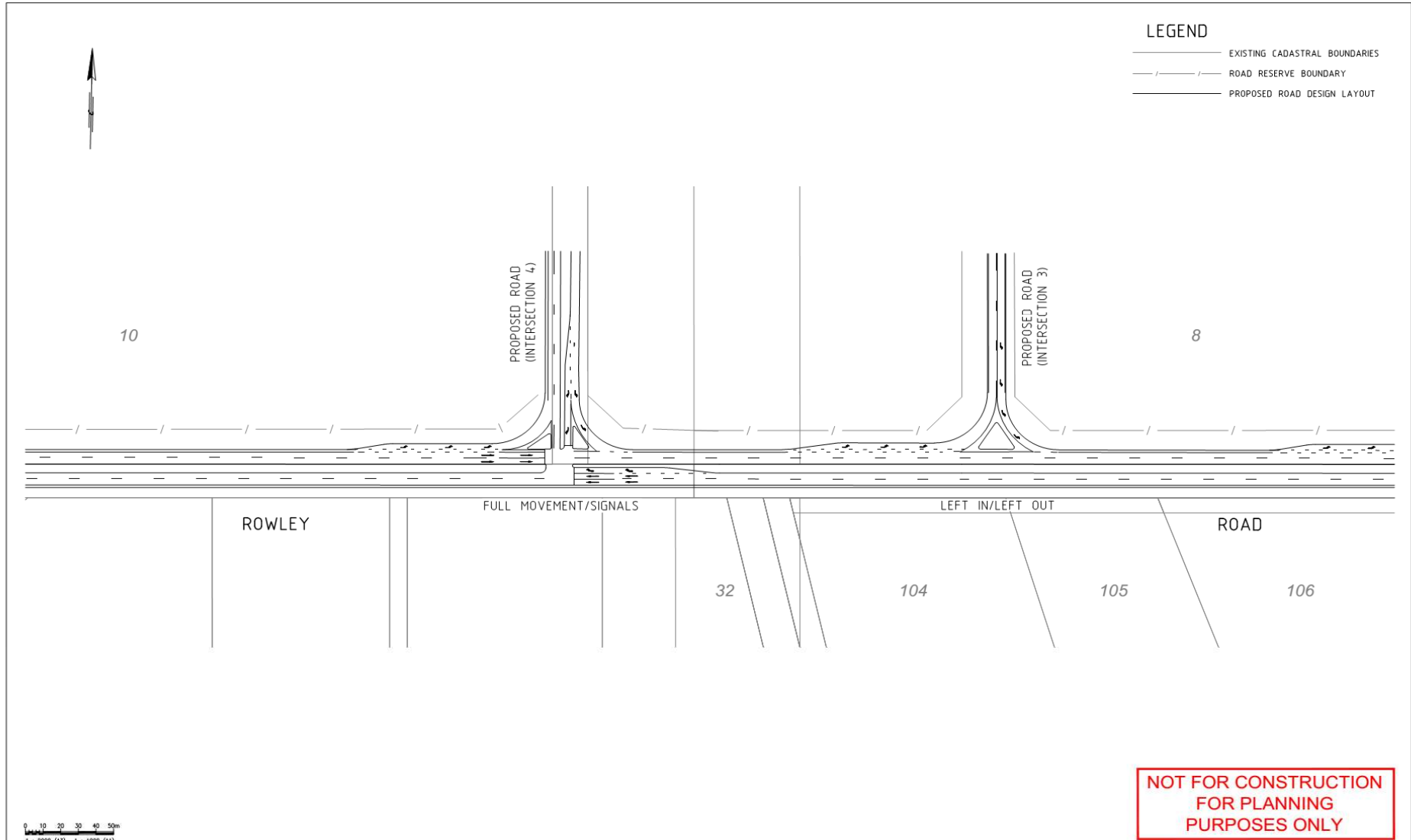
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		CLIENT:	1ST FLOOR 908 ALBANY HIGHWAY EAST VICTORIA PARK WA 6101 P 9355 1300 E admin@shawmac.com.au <b>CONSULTING CIVIL AND TRAFFIC ENGINEERS</b>	DATE DRAWN: 10.09.15	TITLE:
		TURNER MADDESTRA LEWIS		DESIGNED: TS	ROWLEY ROAD PROPOSED INTERSECTIONS KARGOTICH ROAD & INTERSECTION 2 LAYOUT PLAN
A	11.09.15	ISSUED FOR INFORMATION	BH	CHECKED: BH	DRAWING NUMBER: 1204004-SK-004
No.	DATE	DESCRIPTION	APPR.	APPROVED: T SHAW	REV: A
ISSUE AND REVISION HISTORY			SCALE: HORIZ: 1:2000	RTM: -	

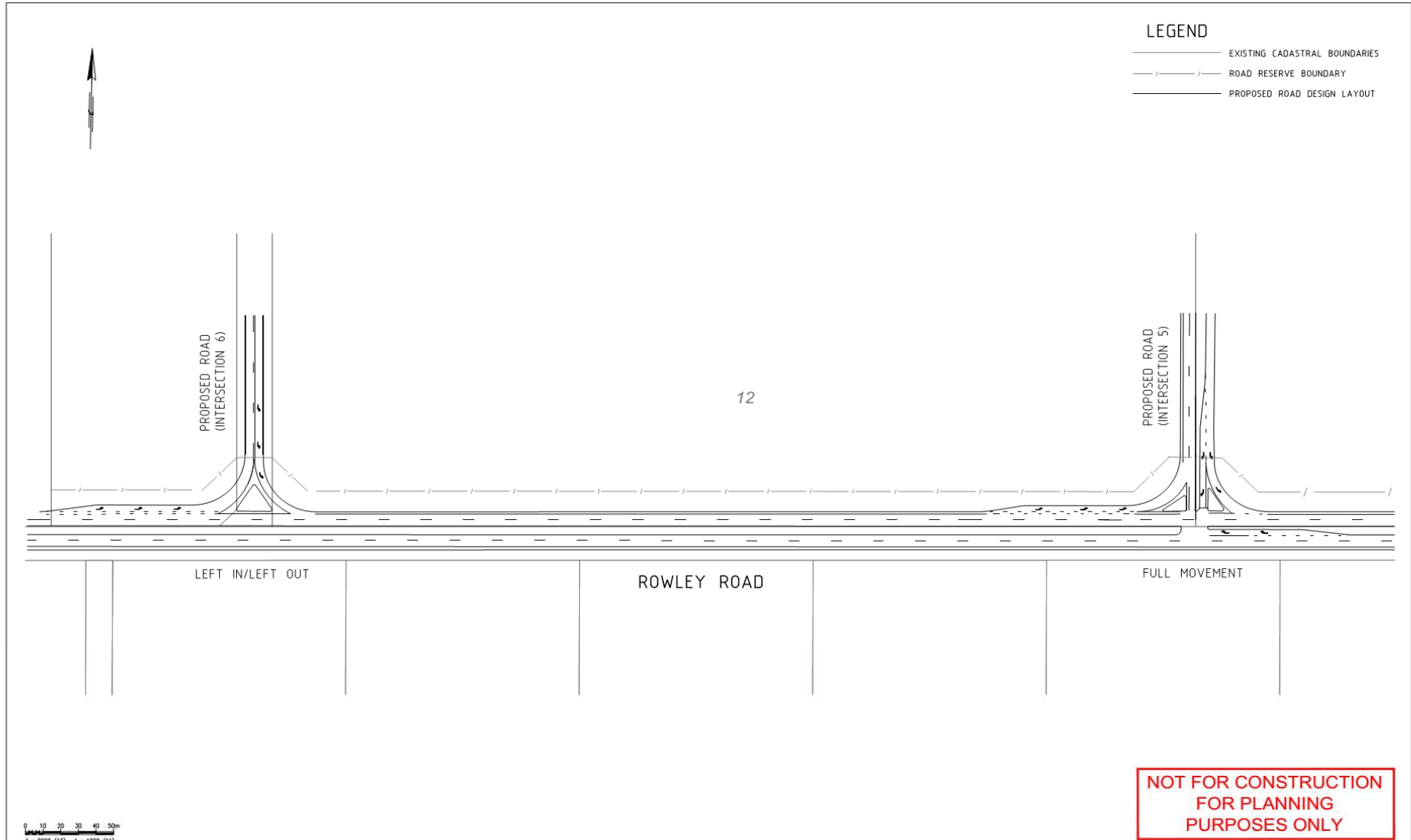
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		TURNER MADDESTRA LEWIS			DESIGNED: TS	ROWLEY ROAD PROPOSED INTERSECTIONS INTERSECTION 3 & INTERSECTION 4	
					DRAWN: CRF	LAYOUT PLAN	
					CHECKED: BH	DRAWING NUMBER: 1204004-SK-003	
					APPROVED: T SHAW	REV. A	
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A	11.09.15	ISSUED FOR INFORMATION	BH				

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		CLIENT:		1ST FLOOR 908 ALBANY HIGHWAY EAST VICTORIA PARK WA 6101 P 9355 1300 E admin@shawmac.com.au CONSULTING CIVIL AND TRAFFIC ENGINEERS	DATE DRAWN: 10.09.15	TITLE:	
		TURNER MADDESTRA LEWIS			DESIGNED: TS	ROWLEY ROAD PROPOSED INTERSECTIONS INTERSECTION 5 & INTERSECTION 6	
					DRAWN: CRF	LAYOUT PLAN	
					CHECKED: BH	DRAWING NUMBER: 1204004-SK-002	
					APPROVED: T SHAW	REV. A	
A 11.09.15 ISSUED FOR INFORMATION BH No. DATE DESCRIPTION APPR.		SCALE: HORIZ: 1:2000		RTM: -			

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## Appendix B – Indicative Carriageway Protection and Land Protection Plans

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